

1865 RADIO WAVE PROPAGATION**J C Maxwell (UK)**

In his first paper on electromagnetism 'On Faraday's Lines of Force' (1855–56) Maxwell set up partial analogies, between electric and magnetic lines of force and the lines of flow of an incompressible fluid. In a series of magnificent papers in 1861–62 he gave a fully developed model of electromagnetic phenomena viewed in the light of the field concept of Michael Faraday of whose validity Maxwell had become fully persuaded by 1858. Adopting the belief of William Thomson (Lord Kelvin) in the

rotary nature of magnetism, a magnetic tube of induction was represented by a set of cells rotating about the axis of the tube, interference between the rotations of neighbouring tubes being avoided by rows of intervening cells (in the manner of idle wheels) which corresponded to electric currents. By means of this model Maxwell was able to give an elegant qualitative interpretation of all the known phenomena of electromagnetism. By introducing the notion of elasticity he was then able to give a quantitative description of the propagation of a disturbance in the model. Reinterpreted in terms of the electromagnetic field, this implied that a disturbance in the electromagnetic field should travel with a speed equal to the ratio of the electrodynamic to the electrostatic units of electric force.

SOURCE: *A Biographical Dictionary of Scientists* by T I Williams (London: Adam and Charles Black) p 358 (1969)

SEE ALSO: 'A dynamical theory of the electromagnetic field' by J C Maxwell *Proc. R. Soc. London* vol 13, pp 531-6 (8 December 1864)